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(54) Machine for making sacks with an angular shaped bottom

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utility model patent

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(57) Required Registration Range of the Utility Model

This is a machine for making sacks with an angular shaped bottom in the following configuration process:

Firstly form symmetrical insertions on both sides of cylindrical film. Create two pairs of window splines by folding each end of both sides of the sack material that was processed to be flat and mobile into the sac material by creating the angle of 90 degrees at the expanded section. Then prepare clip splines that can be expanded with the window splines by inserting the upper edge of the above noted sack material with the window spline into the expanded side of the window splines. And on above noted fold line on the window spline, expand the sack material in the same direction as the fold line, and create extended portions that can go upwards. Furthermore, establish heat bars by pressure bonding the expansion edge of the expanded sack material from both ends and allowing the closure of the bottom of the sack.

Brief Explanation of the Figures:

Figure 1: the perspective diagram of the sack with angular shaped bottom.

Figure 2 (a)-(c): the explanatory figure of the former manufacturing method of making a sack with angular shaped bottom.

Figure 3: the perspective diagram of the invented sack creation machine.

Figure 4 (a)-(c): the explanatory figure for the operational procedure of the invented sack creation machine.

Figure 5 (a)-(c): the explanatory figure of the phased state of the film (sack) that is processed by the operation of the invented sack creation machine.

1---Plate, 2---Film, 4, 4'---back to back mechanism, 5,5'---Window splines, 8,8'---Clip splines, 9,9'---Extended portions, 10,10'---Heat bars.

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Registration Application for the Utility Model Patent

February-2-1978

Patent Office Chief: Mr. Yoji Kumagai

1. The name of the invention:

"Kaku zoko prokusei tai ki"
Machine for creating sacks with an angular bottom

2. Inventor:

The name and address- the same as the applicant information as noted at 3.

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5. Index of the attached documents

- (1) Full Statement - 1 document
 - (2) Blue Print - 1 document
 - (3) Copy of Application - 1 document
 - (4) A letter from the attorney - 1 document
 - (5) A letter of investigation request - 1 document

Full Statement

1. The name of the invention

"Kaku zoko prokusei tai ki"

Machine for creating sacks with an angular bottom

2. Required Registration Range of the Utility Model

This is a machine for making sacks with an angular shaped bottom in the following configuration process:

Firstly form symmetrical insertions on both sides of cylindrical film. Create two pairs of window splines by folding each end of both sides of the sack material that was processed to be flat and mobile into the sac material by creating the angle of 90 degrees at the expanded section. Then prepare clip splines that can be expanded with the window splines by inserting the upper edge of the above noted sack material with the window spline into the expanded side of the window splines. And on above noted fold line on the window spline, expand the sack material in the same direction as the fold line, and create extended portions that can go upwards. Furthermore, establish heat bars by pressure bonding the expansion edge of the expanded sack material from both ends and allowing the closure of the bottom of the sack.

3. Detailed Explanation of the Invention

This invention is in reference to the machine that creates sacks with an angular bottom, which are called gazette bags.

Formerly when a bag with an angular shaped bottom (as shown in Fig. 1) was processed, it was completed by firstly inserting a central core of the cross section of a rectangle into the cylindgular film as shown in Fig. 2 (a). And, expanding the expanded sheets (3, 3') on both left and right sides (as shown with arrow sign at 14, 14'), and sealing the expanded edge with heat bars (4, 4') as shown in Fig. 2 (b). Then folding in both ends (13, 13') to the arrow-signed direction (16) as shown in Fig. 2 and placing a bottom sealing piece (15) depending on its necessity.

However, with this method, it was a troublesome procedure to insert and pull out the center core (2) into the cylindgular film (1). And at the same time, mechanically became complex as there was a need to produce many different sizes of the machines based on the thickness of the cylindgular film (1) making it an inconvenient production procedure and raising the cost of its process as a whole.

This invention aims to propose a machine to create sacks by resolving such demerits, and has some features that will make it possible to produce angular shaped bottom sacks extremely productively.

Details of this invention are explained based on the actual example figures as below.

Fig. 3 is a perspective diagram that expresses the composition of this invention, which is separated into Mechanism A, extension, and the seal mechanism B, and is composed of the following items:

(1) is the plate laid into the mobile portion of the flat file (sack materials) (2) of the machine, which formed symmetrical insertion (3, 3') on both sides.

(4) & (4') are the cuff mechanisms that counter in both sides of a plate, and the window splines (5) & (5') are foldable centering on an axis (6&6') to the shape of a hinge. The countered tips (7&7') consist of a form, which become the angle of 45 degrees when they are unfolded, respectively, it becomes at 90 degrees when it is developed for 180 degrees. In addition, as a note on the window splines (5 & 5'), the window spline that turns around for 180 degrees is the one (5') that is placed on the side where a film (2) is provided, and the opposite window spline (5) is fixed.

(8) & (8') are the clip splines that perform an evolvement operation at 180 degrees on the window spline side (5') by clipping the upper edge (2') of the film (2) with the window spline (5').

(9&9') are made into an extended piece, freely extendable in the direction of an axis (right and left) on the above-mentioned axis (6&6'), and furthermore, the form of these extended pieces (9&9') are not limited. (10&10') are made into the heat bar and arranged on both sides of an extended piece (9&9') in the ordered position. And the heat bars (10&10') are structured where they heat-seal the above noted extended portions (9&9') with electric heat, after the extended portions (9&9') extended the bottom of the sack to right and left directions, and then moving upwards.

This invention consists of the above composition, and its operation is explained below using Fig. 4 and 5.

On Fig. 4 (a), (11) is turned into a control board by placing the film (2) on the folding line (12) of the window splines (5&5'), and it is separate while moving.

(In addition, the control board (11) is effective when placed upon turning-back, but it is not a definite required condition).

The film is projected to the right direction from the folding line (12) in the order to form the angular bottom, and the window splines (5&5') are folded like the figure, and its 45 degree point portion is inserted into insertion (3 & 3') of the film (2).

In addition, the clip splines (8 & 8') clip the upper edge (2') of the film (2) with the window spline (5').

Figure 5 (a) shows the film (2) at above noted Fig. 4 (a) condition.

Next, the window spline (5') and the clip splines (8 & 8') evolve the axis (6) as the center.

The figure that describes such condition is the figure 4 (b). And from this evolution, the film (2) is to evolve from Fig. 5 (b) to (b') since the upper edge (2') is clipped by the window spline (5') and the clip spline (8 & 8'), and the opening at the bottom "a" opens wide and stands straight to a quadrangle.

As shown at Figure 4 (c), the extended portions (9 & 9') come down and are placed inside the opening of the bottom. They expand to left and right directions in the arrow-signed direction (17), and they close the opening of the bottom "a" in the shape of a straight line, and it moves upwards.

After the extended portions (9 & 9') move out, the heat bars (10 & 10') close to the direction as shown in the arrow sign (13) of the Fig. 4 (c), and pressure bonding the previously closed opening of the bottom "a" and heat-seal (14) it (refer Fig. 5 (c)).

With above functions the bottom of the sack is closed. However, it would create a triangular shaped projection on both left and right sides as shown in Fig. 5 (c). Not only it is indecent, it will make it difficult to create the square bottom, so as shown in Fig. 5 (d), each is folded up inside (Fig. 5 (e)), and if necessary, glue a square bottom seal paper (16) on top of it (Fig. 5 (f)).

From above functions, this invention creates the angular shaped bottom, and since it does not use the center core like in the former method, it has the benefit of having good workability and the ability to mass produce at low cost.

Brief Explanation of the Figures:

Figure 1: the perspective diagram of the sack with angular shaped bottom.

Figure 2 (a)-(c): the explanatory figure of the former manufacturing method of making a sack with angular shaped bottom.

Figure 3: the perspective diagram of the invented sack creation machine.

Figure 4 (a)-(c): the explanatory figure for the operational procedure of the invented sack creation machine.

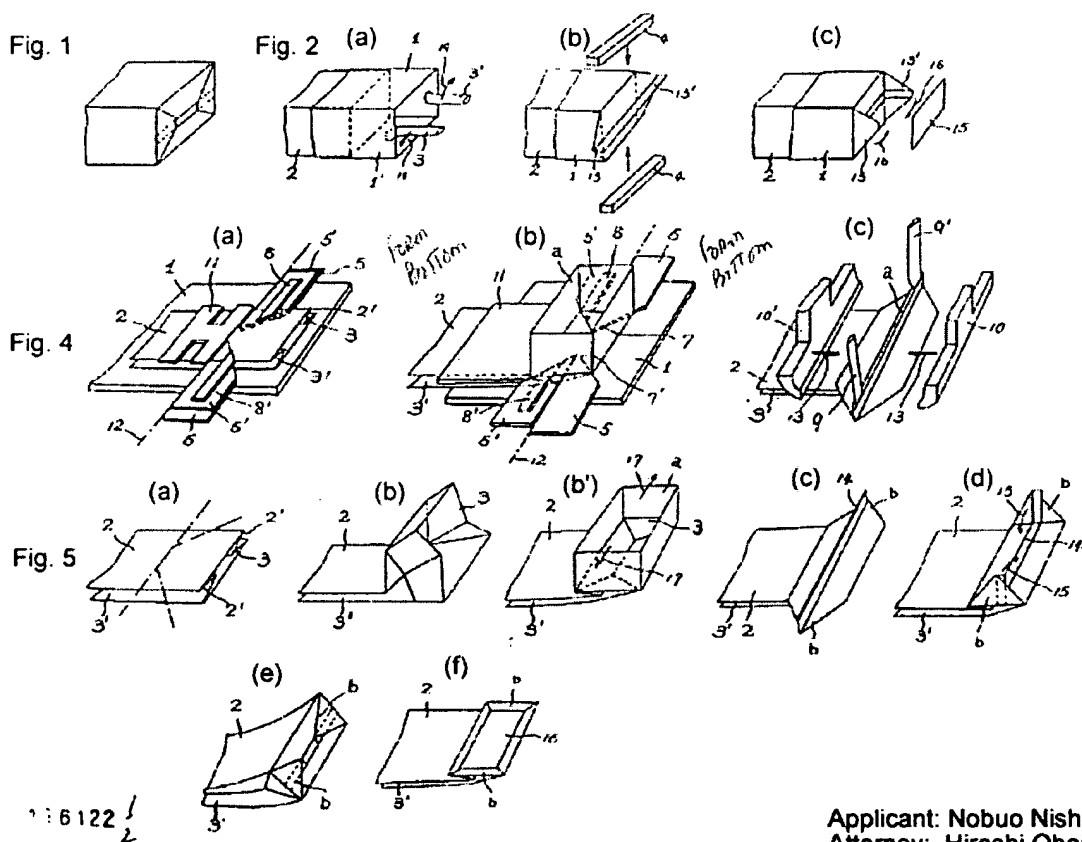
Figure 5 (a)-(c): the explanatory figure of the phased state of the film (sack) that is processed by the operation of the invented sack creation machine.

1---Plate, 2---Film, 4, 4'---back to back mechanism, 5,5'---Window splines, 8,8'---Clip splines,
9,9'---Extended portions, 10, 10'---Heat bars.

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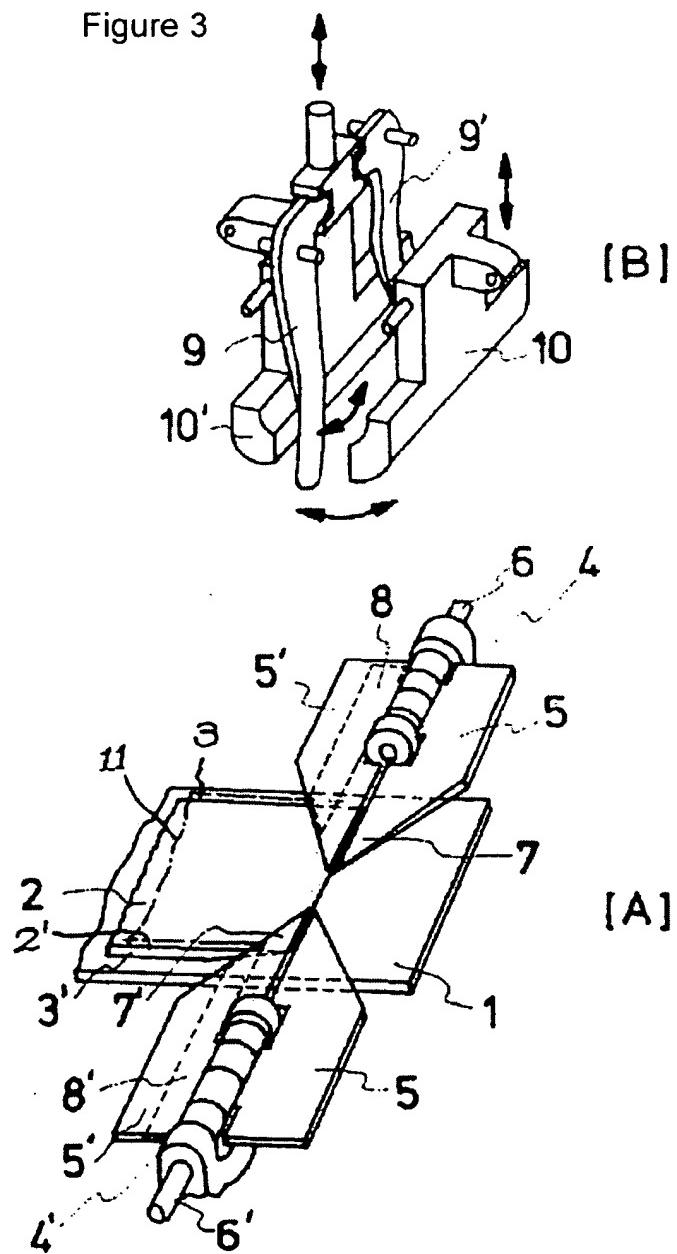
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Figure 3



2
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2
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